AMSAT News Service Weekly Bulletins
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AMSAT NEWS SERVICE
ANS-326
The AMSAT News Service bulletins are a free, weekly news and infor-
mation service of AMSAT North America, The Radio Amateur Satellite
Corporation. ANS publishes news related to Amateur Radio in Space
including reports on the activities of a worldwide group of Amateur
Radio operators who share an active interest in designing, building,
launching and communicating through analog and digital Amateur Radio
satellites.

The news feed on http://www.amsat.org publishes news of Amateur
Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

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SB SAT @ AMSAT $ANS-326.01
ANS-326 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 326.01
 >From AMSAT HQ KENSINGTON, MD.
DATE November 22, 2015
To All RADIO AMATEURS
BID: $ANS-326.01

AO-85 Commissioned, Handed Over To AMSAT-NA Operations

AO-85 has been formally commissioned and turned over to AMSAT
Operations, who are now responsible for the scheduling and modes.

The following guidelines are provided for users:

Uplink power should be on the order of minimum 200 W EIRP for full
quieting at lower antenna elevation angles. Your mileage may vary.
With an Arrow, 5 W has been used successfully to make contacts.

Polarity is important. The satellite antennas are linear. So, if you

are using linearly polarized antennas, you will need to adjust throughout the pass. Full duplex operation facilitates these adjustments while transmitting and is highly recommended.

The downlink is very strong and should be heard well with almost any antenna.

Downlink audio is 5 kHz deviation, as expected. Many will perceive that the audio is "low." This is an effect of the filtering below 300 Hz, which provides for the DUV telemetry, coupled with any noise on the uplink signal resulting from lack of full quieting or being off frequency. That makes for less fidelity than a typical receiver in terms of audio frequencies passed.

Transmit (downlink) frequency varies with temperature. Due to the wide range of temperatures we are seeing in the eclipse cycle, the transmitter can be anywhere from around 500 Hz low at 10°C to near 2 kHz low at 40°C.

Receive frequency has been generally agreed to be about 435.170 MHz, although the AFC makes that hard to pin down and also helps with the uplinks that are off frequency.

Probably the most notable observations about AO-85 are an apparent lack of sensitivity and difficulty in turning on the repeater with the 67 Hz CTCSS when it is not yet activated, or holding it on by the presence of the CTCSS. We have determined a probable cause for the sensitivity issue and while that can't be fixed on AO-85 we are taking steps to prevent similar issues on the rest of the Fox-1 CubeSats. The tone detection threshold along with the receive sensitivity issue makes it hard to bring up the repeater. This is being addressed by adjusting the values for a valid tone detection in the other Fox-1 CubeSats now that we have on orbit information about temperatures and power budget. Full details will be in the Nov/Dec AMSAT Journal.

It is important to remember that science is the reason behind the Fox-1 satellites. Not only does science help with the launch cost, it provides a great amount of educational value both from the science payload and in amateur radio itself. The data-under-voice (DUV) telemetry is an excellent way to provide the science without sacrificing the use of the satellite for communications, which would be the case if higher speed downlinks were needed. DUV provides constant science as long as the repeater is in use, which in turn provides more downlink data for the science - a mutually beneficial combination.

Fox-1A is AMSAT-NA's first CubeSat. Many new techniques are incorporated and lessons will be learned, as with any new "product." The Fox-1 Project is a series of CubeSats. A total of five will be built and flown. Launches are scheduled for three more, and a new NASA CubeSat Launch Initiative proposal will be submitted for the fifth. We will incorporate changes from what we learn in each launch, to the extent possible, in subsequent Fox-1 CubeSats.

Of the four NASA sponsored CubeSats on the ELaNa XII launch October 8, we are sad to report that ARC1 was never heard from and BisonSat was lost after a few weeks of operation. AMSAT extends our deepest sympathy to the people who worked so hard on these projects. To our members, we want to say that the Fox Team is very proud and pleased that our first CubeSat is very successful and hopefully will be for some time.

[ANS thanks AMSAT's Vice President of Engineering, Jerry Buxton, N0JY
for the above information]

The Second Birthday of FUNcube-1 (AO-73)

The FUNcube-1 Ops Team reports:
FUNcube-1 was launched into space two years ago on November 21st 2013.

We are delighted to be able to report that more than 900 stations, including many schools around the world, have received the telemetry from the spacecraft
since launch. Our Data Warehouse is storing more than 750 MB of data from almost 1 million data packets. We are very grateful to everyone who has been contributing to the success of this mission. Please continue to keep the data
flowing as it will provide a valuable resource for students in the future.

The stats continue – speeding along at around 17,500 mph, FUNcube-1, which had
a launch mass of just 982 grams, has completed more than 10,500 orbits of the
earth. This means a total distance travelled of more than 260 million miles.

All telemetry sensors continue to provide valid data, real time, whole orbit and high resolution channels alike. The flight code is really robust and we have only had three unexpected “events” since launch. Two of these we believe
to have been caused by noise of the command receiver being incorrectly interpreted as a command and only one appears to have been caused by a RAM error. The battery and solar panels also continue to work perfectly and provide
a very positive power budget.

We have sent out many Fitter messages for school and other similar events. Earlier this week there was a demonstration at Thorne Green Top School in Yorkshire.

Here is a report from Dave EI4HT/M0GIW:
Good Morning All

Firstly -thanks to all for your help, we had a great morning at Green Top and
the highlight was FUNcube.

  I started with a slide show talking about communications from cave paintings
all the way up to smartphones, we looked at space communications and travel from Sputnik to Astra and Apollo to the Millennium Falcon! We spoke about satellites and how they are used every day and how we all got to watch “I’m A
Celebrity” via Satellite last night from Australia.

I brought in lots of props too, some old Motorola MX330 radios, some PMR 446,
and a marine band radio .I also had a small model of a CubeSat that I knocked
up over the weekend, I also passed around some NOAA images from last week’s Abigail storm and I had a few QSL cards from ISS and MIR from years ago when I

lived in Ireland.

The FUNcube pass was great, really strong signals, I had my turnstile and FCD
set up and had audio through speakers and used the class projector to show Satpc32 and the Dashboard.

There was a great buzz of excitement when we got the first packet and even more when the Fitter messages came through. The kids were fascinated to see the
signal arrive just as the software predicted and then hear the telemetry and the decode.

After the pass we were able to look at the Warehouse online and print off the
QSL card and certificate.

I didn’t get a chance to take many pics but Mrs Overson will update the School Blog and she took lots of pics.

http://greentopschool.co.uk/blog

Once again thanks to all at FUNcube, looking forward to Tim Peake on the ISS in the New Year and planning another visit to the School then.

Regards
Dave EI4HT / M0GIW

PS: I was back dropping my own kids off this morning and Mrs Overson told me they have printed a QSL card and Certificate for each of the students and they
have used them for their class journals.

As well providing a great educational resource, FUNcube-1 operates at night and generally at weekends with the linear transponder active for radio amateurs
to use for communications. The transponder continues to provide an excellent service. As users will be aware, the transponder uplink frequencies vary with
receiver temperature. The RX temp telemetry channel is the best one to use for
tracking this effect. This does make it quite difficult to use full computer control for transponder operations and we have already developed new oscillator
circuits to improve this performance for future missions.

For the telemetry uplinked to the Data Warehouse, it is possible to download special Certificate or QSL Card here
http://amsatuk.me.uk/on/funcube_qsl.php
and, for transponder users, the “73 on 73 award” continues at
http://amsat-uk.org/funcube/73-on-73-award/

The Nayif-1 CubeSat mission, which includes a full FUNcube payload, is expected to be launched into a similar orbit in the first half of next year and
will provide an additional level of service to the community.

Meanwhile we hope everyone will continue to have fun with FUNcube-1!

See:
http://funcube.org.uk/2015/11/20/the-second-birthday-of-funcube-1/

[ANS thanks Graham, G3VZV and the FUNcube-1 Ops Team for the above information]

FM Repeater Test at IO-86 Satellite

A confirmation for the upcoming test of the FM Repeater on IO-86 Satellite (LAPAN-A2/ORARI), has been announced and would be conducted this weekend:
- Saturday, 21 Nov 2015, at 02:30 UTC - 04:50UTC
- Sunday, 22 Nov 2015, at 02:55 – 05:00 UTC
Voice Repeater info:
- Uplink 145.880 Mhz tone 88,5
- Downlink 435.880 Mhz

AMSAT Keplerian data
0 IO-86
1 40931U 15052B   15316.15776324 .00001070 00000-0 60618-4 0 9994
2 40931   6.0030 69.3893 0012877 275.6206 84.2533 14.76374433 6653

As the satellite was designed for emcomm using handheld radio (the reason of
the relatively high-power downlink), we would like all reports of portable ops
(handheld radio using some sort of portable directional antenna,
i.e. CJU / IOio / Moxon / Arrow / etc).

Responses via the amsat-bb

[ANS thanks Suryono Adisoemarta – YD0NXX / N5SNN for the above information]

AMSAT-LU announces transponder satellite payload and launch

(From AMSAT-LU Facebook page:)
Dear friends,

Since several years ago AMSAT Argentina is working to keep alive the dream of
many amateur radio back into space with a satellite of its own, which is the continuity of the legendary LuSat-1 of the años1990 and reaping the benefits of
the technological advance of our days.

For this held various technical activities, developing experiments on board the occasional platforms, all with the same objective: to preserve the human group, enhance their capabilities and spread their resources by guiding them to
the education and development of the activity.

In recent times, AMSAT Argentina has been working in many ways with the company Satellogic, which already launched three satellites of low orbit: Captain Beto, manolito and tita, two of them are now broadcast telemetry and data in uhf and are identified in the Distinctive LU7AA.

Under an agreement signed between the two institutions AMSAT-LU provides

support to those missions operate one of the stations of control in uppsala,
Prov. Of BS. As.

Currently satellogic is facing the construction of a constellation of
satellites of observation of the earth and has invited AMSAT-LU to
participate
in the project of the next two satellites, the ÑUSAT 1 AND ÑUSAT 2,
riding on
one of them a Linear Transponder Analog Amateur Radio Antenna and its
corresponding.

The experiment which provides AMSAT was tested on several occasions in the
land, and also on board one of flights in a balloon launched from the
prov. Of
the Pampas. At that time was called carposat, showing a good performance in
spite of its low power and small size and weight.

On this occasion, the experiment of AMSAT LU - that has no name yet own
- will
be further reduced in its dimensions and mounted on a plaque radiadora
of 10 x
10 cm, in which also won't hold the necessary components for the Source
of food
and the duplexer. The package will be installed on the bus from the NUSAT,
which will provide the energy and will be part of a number of other
experiments
that will carry out this satellite.

The Transponder receives in the band of UHF and VHF Transmitted in, has a
bandwidth of 30 Khz and its output power is 200 mw.;

Frequencies of ascent 435.935 ~ 965 Lsb / CW,
Frequencies of descent 145.965 ~ 935 USB / CW.
Basic telemetry in 145.900 CW.

The launch is scheduled for April 2016 with a Chinese launcher in a
polar orbit
at 500 km. In Height and an inclination of 97 degrees with respect to the
equator.

This is an extraordinary opportunity to our institution, and for all the
Radioamateurs Argentines, be able to have a new satellite in orbit,
after after
so many years of successful LuSat-1.

So far, the funds needed for the preliminary activities of recent years, the
construction and the logistics, were provided by a small number of
members of
the board of directors and partners of AMSAT-LU. Now come the largest
economic
positions for the completion of the electronics and integration with the
satellite principal.

In order to comply with this circumstance, it has been proposed the
establishment of a list where it will include the names and distinctive
signs
of all those who are able and willing to work together, and then give them a
certificate alluding to his gesture.

The neighbors of the autonomous city or the great Buenos Aires, can perform
their collaboration personally during the monthly meetings of AMSAT-LU.
Also at
the headquarters of the RC Qrm Belgrano, permanent partners of AMSAT-LU.
If I'd

be interested in making donations from other sites away, we'll let you know the
way to make their contribution.

Also, we would like to take this opportunity to invite all the partners of AMSAT and amateur radio colleagues who are interested in suggest the name and
the logo for our next satellite Argentine, write to us on the page of AMSAT Argentina in Facebook or sending it by e-mail to
parapente(a)amsat.org.ar.

[ANS thanks Ignacio Mazzitelli, LU1ESY for the above information]

Space Brazilian Agency With Amateur radio PY2SDR LABRE/AMSAT-BR

Brasilia, November 20, 2015 - The Brazilian Space Agency (AEB) received on Tuesday (17) the visit of amateur Edson Wander Pereira, the first to receive and decode the data sent by Serpens-1 cubesat.

The nanossatélite was launched into orbit from the International Space Station
(ISS), the 17th of last September. Ham Radio is in Brasilia
(DF) to attend the 7th Meeting of Science and Technology (ECT - FGA) which ends
today (20) in the Range Campus of the University of Brasilia (UNB).

Pereira lives in Pardinho (SP) and his visit emphasized the importance of dissemination of knowledge to amateurs and students who are interested in nanossatélites.

"The experimental amateur radio is an activity that collaborates with the nanossatélites projects. This joint action causes the development of CubeSats
in schools and universities is promoted by having more data exchange possibilities transmitted by these nanos, "says Pereira.

At the meeting with President of the Agency, José Raimundo Braga, Pereira received from teacher Chantal Capeletti, of UNB and coordinator of Serpens Program, a transmitter that can be used to send data to the satellite and experiment with its payload.

This equipment is part of the mission ground follow-up and was produced in limited numbers, but will be distributed to experimental radio amateurs operating in the area and among the member institutions of the nanossatélite
consortium.

See the story here
http://www.aeb.gov.br/radioamador-experimental-visita-aeb-apos-decodificar-dados-do-serpens-1/

[ANS thanks Paulo, PV8DX for the above information]

United Launch Alliance Reveals Transformational CubeSat Launch Program

Centennial, Colo., (Nov. 19, 2015) – As the most experienced launch company in the nation, United Launch Alliance (ULA) announced today it is taking CubeSat rideshares to the next level by launching a new, innovative program offering universities the chance to compete for free CubeSat rides on future launches.

“ULA will offer universities the chance to compete for at least six CubeSat launch slots on two Atlas V missions, with a goal to eventually add university CubeSat slots to nearly every Atlas and Vulcan launch,” said Tory Bruno, ULA president and CEO. “There is a growing need for universities to have access and availability to launch their CubeSats and this program will transform the way these universities get to space by making space more affordable and accessible.”

"This is exactly the kind of collaborative innovation that we celebrate in Colorado," said Lt. Gov. Joseph Garcia. “Here, we have a Colorado company giving Colorado students at a Colorado university an unbelievable opportunity to send a satellite into space. What a great day for our state."

Rideshare is a flight-proven, innovative approach that provides customers a low-cost way to achieve various mission objectives without the need for a dedicated launch vehicle. CubeSats are miniaturized satellites originally designed for use in conjunction with university educational projects and are typically 10 cm x 10 cm x 10 cm (4 inches x 4 inches x 4 inches) and approximately 1.3 kg (3 lbs).

“Since its inception, ULA has been committed to science, technology, engineering and math (STEM) education initiatives and programs such as this help to motivate, educate and develop our next generation of rocket scientists and space entrepreneurs,” said Bruno. “We are making the announcement today with University of Colorado President Bruce Benson and University of Colorado Boulder Chancellor Philip DiStefano, key partners in STEM education, and are pleased to offer the university the first free CubeSat launch slot in 2017.”

"CU-Boulder students have been building and operating small satellites for 20 years, including the Colorado Student Space Weather CubeSat launched on a ULA Atlas rocket in 2012," DiStefano said. "The ability to provide science and engineering students with the opportunity to fly the satellites they build is an invaluable motivational and educational tool. We are thrilled to partner with ULA, a visionary organization that is helping to facilitate a nationwide STEM effort."

Interested universities should email ULACubeSats(a)ulalaunch.com by Dec. 18, 2015 to notify ULA they are interested in participating. In early 2016, ULA will release a request for proposal (RFP) for the first competitive CubeSat launch slots. The selected universities will be announced in August 2016.

In addition, ULA is offering the nation’s universities the chance to help name the new CubeSat program. Universities, educators and students can submit

names
for consideration to ULACubeSats(a)ulalaunch.com using a campus-issued email address. Submissions are due by Dec.18, 2015. The winning name will be announced early next year, and the institution will receive a free CubeSat launch slot on a future mission.

As America’s ride to space, ULA has launched 102 missions, including 55 CubeSats, with 100 percent mission success.

About United Launch Alliance
With more than a century of combined heritage, United Launch Alliance is the nation’s most experienced and reliable launch service provider. ULA has successfully delivered more than 100 satellites to orbit that provide critical
capabilities for troops in the field, aid meteorologists in tracking severe weather, enable personal device-based GPS navigation and unlock the mysteries
of our solar system.
For more information on ULA, visit the ULA website at
www.ulalaunch.com .
Join the conversation at
www.facebook.com/ulalaunch

twitter.com/ulalaunch and

instagram.com/ulalaunch.

See America’s Ride to Space Offers University Competition for Free STEM CubeSat Rides on Future Launches
http://www.ulalaunch.com/ula-reveals-transformational-cubesat-launch.aspx?title=United+Launch+Alliance+Reveals+Transformational+CubeSat+Launch+Program+

http://www.ulalaunch.com/cubesats.aspx

See also:
http://spaceflightnow.com/2015/11/19/ula-says-it-will-launch-some-cubesats-for-free/

[ANS thanks Jeff Yanko, WB3JFS on the AMSAT-BB for the above information]

Nayif-1 at UAE YouthConnect

YouthConnect is an initiative led by the Expo 2020 UAE team and is catered specifically for the Youth of today. The Nayif-1 team took part in the event by
throwing a workshop titled “Introduction to Cubesatellites.”
YouthConnect is the first in a long-lasting and wide-ranging series highly interactive forums designed by youth for youth. The inaugural event took take
place on Saturday, November 14, 2015. This first interactive, full-day forum,
part of a far wider programme to talk to the younger members of society, was open to all UAE residents between the ages of 18-25.
“From our earliest days conceiving Expo”, says Her Excellency Reem Al Hashimy,
UAE Minister of State and Director General of the Bureau Dubai Expo 2020 “we were determined to put our youth at the heart of our plans. It is these young

men and women who will be representing and leading our nation in the years to
come. So it is important that they contribute to these events and decide what
they want to see and do on the day."
Nayif-1 was built by students at the American University of Sharjah, UAE, in
partnership with the Mohammed bin Rashid Space Centre. The nanosatellite will
incorporate a novel autonomous attitude determination and control system. This
will be the first flight of this system. Additionally it will carry a UHF to
VHF linear transponder that will have up to 0.5 watt output and which can be
used by Radio Amateurs worldwide for SSB and CW communications.
A launch is planned for the first half 2016 on the SpaceX Falcoln 9 SHERPA
mission with deployment into an elliptical, sun synchronous, Low Earth Orbit
(LEO) of about 450 by 720 km.

Follow Nayif-1 on Twitter
https://twitter.com/Nayifone

Frequency information
http://amsat-uk.org/satellites/communications/nayif-1/

YouthConnect at Expo 2020 Dubai
http://expo2020dubai.ae/en/news/article/expo_2020_dubai_unveils_youthconnect

[ANS thanks AMSAT-UK for the above information]

DeorbitSail Update and Initial Camera Image

Chris Bridges 2E0OBC of the Surrey Space Centre provides this update on the
status of the DeorbitSail Cubesat.

Dear AMSAT Community,

We would like to express our gratitude for your cooperation in the DeorbitSail
project, and update you on the status of the mission.

As you know the DOS mission was launched on 10th July. After 4 months of
operations, the satellite is healthy and stable, although unfortunately we have
not been able to meet all of the mission objectives. Initial contact with the
satellite was established relatively smoothly and we received a lot of good
data, both through our own ground station but also via the network of you radio
amateurs who have been very generous with your time and help.

We achieved a power stable state early on, with good comms (uplink and
downlink) established within the first few days. We deployed the solar panels
successfully, and managed to return to a good and stable power state after
deployment. The ADCS has been challenging from the start, and continues to be
challenging – we have struggled to accurately determine the satellite tumble
rate and get it under control (more detail on that is included below). We know

that the satellite has seen some very high spin rates for various reasons, including some inherent design/magnetic characteristics which have become apparent.

Despite many attempts, we have unfortunately not been able to deploy the sail,
and having recently thoroughly analysed and investigated the possible causes,
mission events and ground test data and history, we are now reaching the conclusion that achieving successful sail deployment is very unlikely. Again there is more detail on that in the main body of text below.

We thank you for your patience and would like to apologise for not keeping you updated on mission progress as often as we'd hoped. The operations phase has been a learning and sometimes stressful experience for all of the team at
SSC, with a lot of head scratching and sleepless nights involved.

Here is some more detailed information regarding what progress and achievements have been made during the operations to date.

• After the launch on the 10th of July, and the first week in orbit, with a power safe and healthy satellite, the operation passed from the LEOP phase to
the ADCS Commissioning phase. This second phase was estimated to last between
three and four weeks; this proved to be optimistic.

• Although the spin up of the S/C was much higher than expected and saturated
the sensors, the SU simulations and the available data suggested a large Z-spin
rate on DOS which was confirmed by the B-field and MEMS magnetometry measurements. To induce a bigger difference in the Moments of Inertia (MoI) of
the two non-longitudinal axes, the decision was taken to deploy the solar panels. This operation was performed the 10th of August.

• More than a month after the launch the satellite was really healthy, power safe and with great comms through newly developed software defined radio and database backend operations. Although the stabilization wasn't achieved even with the solar panel deployment, at one month from the launch the team decide
to proceed with the sail deployment.

• This decision was agreed with DLR that confirmed that tumbling rates were no
issue for the sail deployment, because the Moments of Inertia increase rapidly
slowing down the tumble rate. DLR has performed a deployment test on Gossamer
while tumbling before coming to this opinion.

• On the 15th of August, the first attempt for sail deployment was performed,
the command was sent and the acknowledgement from the S/C was received, but no
current was drawn from the boom deployer motor. Multiple experiments were performed to try and determine the cause of sail deployment failure.

• At this point, after a thorough investigation, the most plausible hypothesis
and justification seems to be a physical disconnection of the motor cables. (Note that after the vibration test, it wasn't possible to physically

inspect
the connection due to the design itself of the S/C)

Our simulations showed that with the actual configuration (deployed solar
panels, undeployed sail) the decay time should be 20 years circa.

The aim now is to exercise and exploit the parts of the satellite that are
working, and gain more confidence and experience with the SU ADCS
system, the
ISIS TRXUV and solar panels, and the SSC SDR groundstation and database
tools
to explore better the interaction of the panel circuitry with the attitude
stabilisation. That will allow us to improve our performances in the next
missions.

From here, the team have worked hard to take images of the Earth and
via SU's
CubeSense camera – which we are delighted to show you today. This would
not be
possible without the dedication from the SSC team here and, of course, the
amateur telemetry you kindly send us. We are going to continue imaging and
testing at higher resolutions too so watch this space.

We thank you for all the support.

Chiara Massimiani, DOS Project manager & Prof Guglielmo Aglietti SSC
Director
and DOS PI

DeorbitSail
http://amsat-uk.org/satellites/telemetry/deorbitsail/

Surrey Space Centre
http://www.surrey.ac.uk/ssc/research/space_vehicle_control/deorbitsail/

[ANS thanks AMSAT-UK for the above information]

SPROUT SSTV and Digitalker active every Sunday

Slow Scan TV (SSTV) images in Scottie 1 format will be transmitted from the
SPROUT satellite every Sunday (Japanese Standard Time) on 437.600 MHz FM
(+/- 9
kHz Doppler shift). The Digitalker will also be active.

SPROUT, a 20 x 20 x 22 cm amateur radio nano-satellite with a mass of
7.1 kg,
launched successfully with the L-band (1236.5 MHz/1257.5 MHz/1278.5 MHz)
Synthetic Aperture Radar (SAR) satellite ALOS-2 on May 24, 2014 at 0305 UT.
SPROUT is in a 654 km, 97.9 degree inclination Sun Synchronous Orbit (SSO).

SPROUT (Space Research On Unique Technology) was built by students from
Nihon
University and its objectives are:
1. Operation of satellite by radio amateurs.
A FM Digitalker will enable the satellite to speak to amateurs around
the world.
The Voice Message Box will record transmissions from radio amateurs and play
them back.

Pre-loaded images from the Message Gallery can be transmitted using Slow Scan
TV (SSTV).
Pictures of the Earth can be transmitted by SSTV and radio amateurs can receive it using free software such as MMSSTV. As part of the Earth mapping project the team ask radio amateurs to contribute pictures they have received
from the satellite for display on the SPROUT website.
The satellite also has a packet radio Digipeater and Text Message Box function.

2. Demonstration of the deployment of the combined membrane structure and verification of the design method of the structure SPROUT has a triangular membrane supported by two tubes like framework. They are folded and stored in the satellite before the launch. After the launch, the nitrogen gas
is injected into the tubes in space, and they extend, so that the membrane deploys (called “combined membrane structure”).

3. Demonstration of attitude determination and control of a nanosatellite using the sun sensors, gyros, geomagnetic sensor and magnetic torquers.

Callsign: JQ1ZJQ
Size: 214x210x220 mm
Weight: 7.1 kg
Mode: 1200bps AFSK, 9600bps GMSK
CW downlink 437.525 MHz
FM packet downlink 437.525 MHz
Digipeater uplink 437.600 MHz
Digitalker downlink 437.600 MHz
SSTV downlink 437.600 MHz

SPROUT English website
http://sat.aero.cst.nihon-u.ac.jp/sprout-e/

SPROUT Japanese website
http://sat.aero.cst.nihon-u.ac.jp/sprout/

Nihon-Univ. Miyazaki Laboratory on Facebook
https://www.facebook.com/pages/Nihon-Univ-Miyazaki-Laboratory/406566642818860

Telemetry Software
http://sat.aero.cst.nihon-u.ac.jp/sprout-e/2-Software-e.html

Telemetry format
http://sat.aero.cst.nihon-u.ac.jp/sprout-e/2-Formats%20of%20telemetry-e.html

SPROUT launch data page
http://sat.aero.cst.nihon-u.ac.jp/sprout-e/2-Launch%20data-e.html

TLE’s from the North American Aerospace Defence Command (NORAD) are also available at
http://celestrak.com/NORAD/elements/tle-new.txt

Free Slow Scan TV (SSTV) software MMSSTV
http://hamsoft.ca/pages/mmsstv.php

The JE9PEL website has information on other satellites on this launch
http://www.ne.jp/asahi/hamradio/je9pel/jaxalos2.htm

[ANS thanks AMSAT-UK for the above information]

AMSAT Events

Information about AMSAT activities at other important events around the country. Examples of these events are radio club meetings where AMSAT Area Coordinators give presentations, demonstrations of working amateur satellites, and hamfests with an AMSAT presence (a table with AMSAT literature and merchandise, sometimes also with presentations, forums, and/or demonstrations).

*Saturday, 5 December 2015 – Superstition Superfest 2015 in Mesa AZ

*Saturday, 9 January 2016 – Thunderbird Hamfest 2016 in Phoenix AZ

*Friday and Saturday, 19-20 February 2016 – Yuma Hamfest and 2016 ARRL Southwest Division Convention in Yuma AZ

*Saturday and Sunday, 12-13 March 2016 – ScienceCity science fair, on the University of Arizona campus in Tucson AZ

*Saturday, 19 March 2016 – Scottsdale Amateur Radio Club Spring Hamfest 2016 in Scottsdale AZ

*Saturday, 26 March 2016 – Tucson Spring Hamfest in Tucson AZ

[ANS thanks AMSAT-NA for the above information]

ARISS News

Successful Contacts

* Kiluutaq School, Umiujaq, Nunavik Quebec, Canada, telebridge via W6SRJ
The ISS callsign was NA1SS
The scheduled astronaut was Kimiya Yui KG5BPH
Contact was successful: Tue 2015-11-17 16:47:02 UTC 41 deg

We are students from Kiluutaq school. Our school is located in the village of
Umiujaq. This is a small village of about 460 people in northern Quebec (Canada). In winter, we use special clothes to go hunting. We hunt seals, belugas, caribou, fish and foxes. In addition, every year we celebrate the blueberry festival and we pick a lot of blueberries. Our village is very special since we are talking 3 different languages: Inuttitut, English and French. In our village there are two stores, a school, an arena, an airport,a
health center and a community center.

Steve, VE3TBD reported:
Contact went well... very well in fact.

All questions answered - 13
140 students.
50 parents.

Astronaut was a little low at times but overall very good. I heard him well

but I know the many languages and cultures do influence how we hear things - very interesting to have the French, English and native languages involved. Our humanoid robot did a very god job of getting the students up for event. Presentations were undertaken in both English and local language.
My thanks goes to the very excellent job by Radio Station W6SRJ, Moderator Brian Jackson and all else connected and involved.

* A direct contact via OEØARISS with students at BORG Monsbergergasse, Graz,
Austria, was successful Mon 2015-11-09 09:42:15 UTC 49 deg. Astronaut Kjell Lindgren KO5MOS answered 11 questions for students.

The BORG Monsbergergasse is a grammar school in Graz, Monsbergergasse 16. Graz
is the second largest city in Austria, located in the southeast of the country.
The school can easily be reached from everywhere in Graz using public transport.
About 800 students attend the school and there are about 100 teachers. Our students can choose between 5 different areas of interest: sports, science, music, art and informatics. After four to five years the students graduate from
school after taking their A-levels.
The school offers a fantastic infrastructure for the students. Apart from the
classrooms there is a lab, a library and a cafeteria. There are special computer rooms, four gyms and outside there are several courts for doing sports. Besides there is a garden to relax in the breaks.

Upcoming Contacts

* Scuola Media Statale “G. Marconi”, Soleto, Lecce, Italy, And, Scuola Secondaria di Primo Grado “Benedetto Croce”, Civate, Italy, telebridge via VK4KHZ
The ISS callsign is presently scheduled to be NA1SS
The scheduled astronaut is Kimiya Yui KG5BPH
Contact is a go for: Mon 2015-11-23 09:21:53 UTC 87 deg

The event will be webcast on:
https://www.youtube.com/watch?v=qkFhGc2nes4

* Dragonskolan, Umeå, Sweden, telebridge via VE4ISS
The ISS callsign is presently scheduled to be NA1SS
The scheduled astronaut is Kjell Lindgren KO5MOS
Contact is a go: Tue 2015-11-24 09:44:25 UTC 78 deg

Watch
http://www.ariss.org/upcoming-contacts.html
for information about upcoming contacts as they are scheduled.

[ANS thanks ARISS, and Charlie, AJ9N for the above information]

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* Satellite Shorts From All Over

* W5PFG Plans Satellite Operation From South Padre Island

IOTA NA-092 - (Satellite Op) Clayton, W5PFG, will operate portable from South Padre Island, Texas, in EL16 between November 22-26th. He plans to operate several passes a day from EL15, covering the southern-most tip of Texas. An operation from EL06 is possible sometime in the beginning of that week. You can follow his operation on Twitter <https://twitter.com/@w5pfg> starting November 21st. It's possible he will operate once or twice while enroute. Clayton will try to work as many different satellites as possible. He tends to favor FO-29, typically 15-20 kHz above the center of the transponder.

[ANS thanks Ohio/Penn DX Bulletin No. 1240 for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
Joe Spier, K6WAO
k6wao at amsat dot org